

### REMARKS

Claims 1, 5, 9, and 13-27 are pending in the above-identified application, the remaining claims having been withdrawn from consideration. Claims 1, 5, 9, and 13-27 have been rejected under 35 U.S.C. 101, 102(b), and 103(a). Applicant traverses all rejections and respectfully requests reconsideration of the claims in light of the remarks made in this response.

#### Information Disclosure Statement

The Office Action objects to the last filed Information Disclosure Statement (IDS) as being overly lengthy and being filed subsequent to the Notice of Allowance. The IDS was not signed as having been reviewed by the Examiner. Rather, citing MPEP § 2004, the Office Action requests technical assistance in reviewing the references cited on the IDS.

The IDS was timely filed with a Request for Continued Examination (RCE). It is appropriate to file an IDS following close of prosecution, if the filing is accompanied by an RCE. MPEP § 706,07(h); 37 C.F.R. 1.114. Accordingly, the timing of the IDS was proper and consistent with the rules.

MPEP § 609 states “An information disclosure statement filed in accordance with the provisions of 37 C.F.R. 1.97 and 37 C.F.R. 1.98 will be considered by the examiner assigned to the application” (emphasis added). The IDS in the present case was filed in accordance with 37 C.F.R. §§ 1.97 and 1.98. MPEP § 609 continues, “Once the minimum requirements of 37 C.F.R. 1.97 and 37 C.F.R. 1.98 are met, the examiner has an obligation to consider the information.” There is no limitation in 37 C.F.R. 1.97 or 37 C.F.R. 1.98 regarding the length or number of the references. Moreover, such requirements are not provided in MPEP § 609.04(a), which provides guidelines for the content requirements for IDS’s. The Office Action cites MPEP § 2004, suggesting that there is a requirement on the part of the Applicant to highlight certain documents,

when a long list of documents is cited in an IDS. Applicants respectfully disagree. MPEP § 2004 provides “examples of possible procedures which could help avoid problems with the duty of disclosure” (emphasis added). This section also notes that “compliance with these procedures may not be required” (emphasis added). Accordingly, the procedures provided in MPEP § 2004 are not threshold requirements for having an IDS considered. Rather, the only threshold requirements for IDS’s are provided in 37 C.F.R. 1.97 and 1.98, which Applicants submit they have met.

Nevertheless, to expedite prosecution, Applicants provide the following information regarding some of the references that were cited in the IDS. A clean copy of the PTO Form SB-08 is provided in Appendix A, for the convenience of the Examiner during review.

CS ChemFinder, Searching and Information Integration, “The ChemFinder WebServer: Indexing Chemical Data on the Internet” (1999) was cited by the Examiner on page 3 of the Office Action attached as Appendix B during prosecution of co-pending U.S. Application No. 09/565,085.

U.S. Patent No. 5,740,425 to Povilus was cited by the Examiner on pages 3-4 of the Office Action attached as Appendix C during prosecution of co-pending U.S. Application No. 09/565,085.

U.S. Patent No. 5,950,192 to Moore was cited by the Examiner on pages 3-4 of the Office Action attached as Appendix C during prosecution of co-pending U.S. Application No. 09/565,085. Symmetry is mentioned in U.S. Patent No. 5,950,192 at Col. 6, lines 40-41.

U.S. Patent No. 5,577,239 to Moore was cited by the Examiner on pages 3-4 of the Office Action attached as Appendix D during prosecution of co-pending U.S. Application No. 09/565,085. This reference was also cited by the Examiner on pages 2-4 of the Office Action

attached as Appendix AA and on pages 3-4 of the Office Action attached as Appendix BB during prosecution of co-pending U.S. Application No. 09/565,810. Symmetry is mentioned in U.S. Patent No. 5,577,239 at Col. 6, lines 39-40.

U.S. Patent Application Publication No. 2002/00495548 to Bunin was cited by the Examiner on pages 4-5 of the Office Action attached as Appendix E during prosecution of co-pending U.S. Application No. 09/565,085.

U.S. Patent Nos. 6,236,989 to Mandyam *et al.* and 6,453,064 to Aikawa *et al.* were cited by the Examiner on pages 2-9 of the Office Action attached as Appendix F and on pages 2-10 of the Office Action attached as Appendix G, during prosecution of co-pending U.S. Application No. 09/796,007.

U.S. Patent No. 5,486,995 to Krist *et al.* and was cited by the Examiner on pages 5-6 of the Office Action attached as Appendix F and on pages 5-6 of the Office Action attached as Appendix G, during prosecution of co-pending U.S. Application No. 09/796,007.

U.S. Patent No. 6,618,852 to van Eikeren *et al.* was cited by the Examiner on pages 6-9 of the Office Action attached as Appendix F and on pages 6-10 of the Office Action attached as Appendix G, during prosecution of co-pending U.S. Application No. 09/796,007.

U.S. Patent No. 6,199,017 to Tomonaga *et al.* and was cited by the Examiner on pages 7-8 of the Office Action attached as Appendix F and on page 7 of the Office Action attached as Appendix G, during prosecution of co-pending U.S. Application No. 09/796,007.

U.S. Patent No. 5,978,848 to Maddalozzo Jr. *et al.* was cited by the Examiner on pages 8-9 of the Office Action attached as Appendix F and on pages 8-9 of the Office Action attached as Appendix G, during prosecution of co-pending U.S. Application No. 09/796,007.

U.S. Patent No. 5,345,516 to Boyer *et al.* was cited by the Examiner on pages 5-6 of the Office Action attached as Appendix H, on pages 5-6 of the Office Action attached as Appendix I, on page 7 of the Office Action attached as Appendix J, on pages 8-9 of the Office Action attached as Appendix K, and on pages 6-7 of the Office Action attached as Appendix L, during prosecution of co-pending U.S. Application No. 09/502,810.

U.S. Patent No. 4,473,890 to Araki *et al.* was cited by the Examiner on page 7 of the Office Action attached as Appendix J, during prosecution of co-pending U.S. Application No. 09/502,810.

U.S. Patent No. 5,874,564 to Ecker *et al.* was cited by the Examiner on pages 3-4 of the Office Action attached as Appendix M and on pages 5-6 of the Office Action attached as Appendix N, during prosecution of co-pending U.S. Application No. 09/502,810.

Ihlenfeldt *et al.* (J. Chem. Information and Computer Sciences 35(4) (1995)) was cited by the Examiner on pages 5-6 of the Office Action attached as Appendix N, during prosecution of co-pending U.S. Application No. 09/502,810.

Glendening *et al.* (J. Computational Chem. Vol. 19, No. 6, pp. 593-609 (1998)) and/or Graovac *et al.* (JACS 95(19), pp. 6267-6273 (1973)) were cited by the Examiner on pages 5-11 of the Office Action attached as Appendix O; on pages 3-9 of the Office Action attached as Appendix P; on pages 7-9 of the Office Action attached as Appendix Q and on pages 6-7 of the Office Action attached as Appendix R, during prosecution of co-pending U.S. Application No. 09/506,717.

Morikawa (Computers Chem. 20:159-165 (1996)) was cited by the Examiner on pages 7-8 of the Office Action attached as Appendix R, during prosecution of co-pending U.S. Application No. 09/506,717.

Morrison and Boyd (Organic Chemistry, 1973) was cited by the Examiner on pages 2-4 of the Office Action attached as Appendix S, on pages 2-5 of the Office Action attached as Appendix T and on pages 3-4 of the Office Action attached as Appendix U, during prosecution of co-pending U.S. Application No. 09/506,717. This reference was also cited on pages 5-8 of the Office Action attached as Appendix V, during prosecution of co-pending U.S. Application No. 09/506,717.

U.S. Patent Nos. 6,128,619 to Fogarasi *et al.*, 6,341,314 to Doganata *et al.* and/or 5,418,944 to DiPace *et al.* were cited by the Examiner on pages 3-7 of the Office Action attached as Appendix W; on pages 3-7 of the Office Action attached as Appendix X, and on pages 2-6 of the Office Action attached as Appendix Y, during prosecution of co-pending U.S. Application No. 09/430,870.

U.S. Patent No. 6,240,374 to Cramer *et al.* was cited by the Examiner on pages 2-3 of the Office Action attached as Appendix Z, during prosecution of co-pending U.S. Application No. 09/565,810. Symmetry is mentioned in U.S. Patent No. 6,240,374 at Col. 22, lines 44-47.

U.S. Patent No. 6,324,522 to Petersen *et al.*, was cited by the Examiner on pages 2-3 of the Office Action attached as Appendix AA and on pages 3-4 of the Office Action attached as Appendix BB, during prosecution of co-pending U.S. Application No. 09/565,810.

STN Database Summary Sheet Registry (Dictionary Searching) and U.S. Patent No. 4,811,217 to Tokizane *et al.* were cited by the Examiner on pages 2-5 of the Office Action attached as Appendix CC, during prosecution of co-pending U.S. Application No. 09/632,406.

### **Rejection of Claims Under 35 U.S.C. 101**

Claims 1, 5, 9, and 13-27 are rejected under 35 U.S.C. 101 as allegedly being directed to non-statutory subject matter. The Office Action asserts that the claims do not produce a concrete, useful and tangible result. Applicant disagrees with the assertion that the claims are directed to non-statutory subject matter. Moreover, this rejection follows a Notice of Allowance for the same claims. Such piecemeal prosecution is generally disfavored. Nevertheless, solely in an effort to expedite allowance, independent claims 1, 5, and 9 have been amended to include “outputting a representation of a chemical structure.” Applicant respectfully requests the rejection be removed in view of the amendment.

### **Rejection of Claims Under 35 U.S.C. 102(b) and 103(a)**

#### ***Helson Thesis***

Claims 1, 5, 9, and 13-27 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Helson, “Simulation of Carbene Chemistry and Other Problems in Computer-Assisted Organic Synthesis,” Purdue University 1993 (“Helson thesis”). Applicant respectfully disagrees. At minimum, the Helson thesis does not teach or suggest “positioning symmetrically equivalent atoms and bonds in the chemical structure diagram in accordance with the identified symmetry,” as required by independent claims 1, 5, and 9. Accordingly, the pending claims are not anticipated by, nor rendered obvious by, the cited reference.

The Office Action alleges that the Helson thesis discloses a positioner positioning symmetrically equivalent atoms and bonds in the chemical structure in accordance with the identified symmetry at page 246, Figure 4.5 and, generally, in Chapter 3. Applicant respectfully disagrees. To the extent any of these sections of the Helson thesis discusses symmetry, the

discussion is limited to the *perception* of symmetry, not positioning symmetrically equivalent atoms and bonds in a chemical structure. For example, at page 246, the Helson thesis states “Symmetry perception occurs during the middle of perception....” The next paragraph continues, “The symmetry algorithm requires stereochemical perception information, and must therefore reside after the point in the perception sequence where that is derived.” There is no discussion of positioning atoms – whether they are symmetrically equivalent or not – at page 246 of the Helson thesis. Likewise, Figure 4.5, which is referenced at page 246, “reveals the Perception Phase in greater detail” (p. 246), by showing the steps covered in the perception phase of the CAMEO program, including evaluating rings and aromaticity, stereochemistry and symmetry, as well as other factors. Again, there is no teaching or suggestion to position symmetrically equivalent atoms in any way, let alone “in accordance with the identified symmetry,” as required by the claims.

Similarly, Chapter 3 of the Helson thesis, also cited in the Office Action, does not teach positioning symmetrically equivalent atoms, as required by the claims. Rather, Chapter 3 is concerned with the creation of structure diagrams from connection tables. To the extent Chapter 3 of the Helson thesis discusses symmetry at all, it is with regard to symmetry perception, not “positioning symmetrically equivalent atoms ... in accordance with [an] identified symmetry,” as required by the independent claims. For example, symmetry perception is one of ten criteria utilized in the Aef\_Redraw algorithm, which “measures how well a given molecule or collection of molecules is drawn” (p. 203). As discussed at pages 207-209, with regard to symmetry, the algorithm is directed, in part, at the problem of assessing the level of symmetry in a diagram (*e.g.*, by determining a molecule’s “graphical moment” (p. 208)); there is no teaching or suggestion of positioning symmetrically equivalent atoms in accordance with the identified

symmetry. (*E.g.*, “Perhaps the hardest aesthetic to detect algorithmically is balance: the symmetrical distribution of like groups...” (p. 207, emphasis added); “The obvious way to assess symmetry...” (p. 208, emphasis added)).

As discussed above, the Helson thesis, at minimum, does not teach or suggest “positioning symmetrically equivalent atoms and bonds in the chemical structure diagram in accordance with [an] identified symmetry,” as required by each of the independent claims. Rather, the Helson thesis addresses certain problems with regard to chemical structure diagrams, including but not limited to, determining symmetry as part of evaluating the aesthetic appearance of a chemical structure diagram. The Helson thesis does not, however, teach or suggest positioning symmetrically equivalent atoms and bonds in accordance with the determined symmetry. Accordingly, the Helson thesis does not anticipate or render obvious the claims of the instant application.

Regarding dependent claims 13-27, as explained above, the Helson thesis does not teach or suggest positioning symmetrically equivalent atoms and bonds in a chemical structure diagram in accordance with an identified symmetry. Therefore, because this limitation is incorporated into each of the dependent claims, the Helson thesis does not anticipate or render obvious the subject matter of dependent claims 13-27.

***Hu et al., Shelley et al., or Fan in view of the Helson thesis***

Claims 1, 5, and 9 are rejected under 35 U.S.C. 103(a) as being anticipated by Hu *et al.*, Shelley *et al.*, or Fan in view of the Helson thesis. Applicant respectfully disagrees. To establish a prima facie case of obviousness, all claim limitations must be taught or suggested by the prior art. MPEP § 2143.03. As discussed above, the Helson thesis does not teach or suggest “positioning symmetrically equivalent atoms and bonds in the chemical structure diagram in



accordance with the identified symmetry,” as required by independent claims 1, 5, and 9. The combination of Helson with Hu *et al.*, Shelley *et al.* or Fan does not cure this deficiency. As explained in more detail in the Response to Office Action dated May 24, 2006, the Hu abstract is concerned with the detection of topological symmetry, in a chemical structure, not the expression of such symmetry in a chemical structural diagram. Shelley, like Hu, teaches an algorithm for detecting topological symmetry. Similarly, Fan, like Hu and Shelley, is concerned with the detection of equivalent atoms. Page 654, abstract (“A simple and efficient algorithm for the perception of constitutionally equivalent atoms in a target molecule is reported.”) (emphasis added). None of these references teaches or suggests positioning symmetrically equivalent atoms and bonds in a chemical structure diagram in accordance with an identified symmetry. Thus, none of the cited references teach all the elements of the claimed invention, either alone or in combination. Accordingly, Applicant submits that the claimed invention is nonobvious in view of Hu or Shelley, or Fan, further in view of the Helson thesis.

***Hu et al., Shelley et al., or Fan in view of the Helson thesis, further in view of Chem 3D and Razinger et al.***

Claims 13-27 are rejected under 35 U.S.C. § 103(a) as being obvious in view of Hu, Shelley, or Fan, in view of the Helson thesis, and further in view of Chem 3D and Razinger. Applicant respectfully disagrees. Claims 13-27 depend from claim 1. As explained above, Hu, Shelley, or Fan in combination with the Helson thesis do not teach or suggest positioning symmetrically equivalent atoms and bonds in a chemical structure diagram in accordance with an identified symmetry. Razinger and Chem3D do not cure this deficiency. As described in more detail in the Response to Office Action dated May 24, 2006, Razinger, like Hu, Shelley and Fan merely discloses algorithms for the detection of symmetry. Razinger provides no further

teaching regarding expressing symmetry in a chemical structural diagram. Chem3D, in addition to not teaching or suggesting positioning symmetrically equivalent atoms and bonds in a chemical structure diagram in accordance with an identified symmetry, also did not assess symmetry. For the reasons stated above, the combination of Razinger and Chem3D does not provide the required teaching to cure the defects in the other references. Accordingly, Applicant submits that claims 13-27 are nonobvious.

### **Conclusion**

In view of the foregoing remarks, Applicants submit that all pending claims are in condition for allowance, which action is earnestly solicited.

Applicants respectfully request an early and favorable reconsideration and issuance of this application as amended herein. The Examiner is encouraged to contact the undersigned to expedite prosecution of this application.

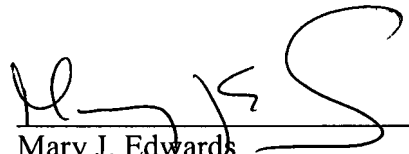
Applicants also include a petition for a two-month extension of time to extend the period for response up to and including May 21, 2007. An authorization to charge the associated small entity fee of \$225.00 to our Deposit Account No. 08-0219 accompanies this response.

No other fees are believed to be due in connection with this submission. However, if any fees are due in connection with this application, please charge them to our Deposit Account No.

08-0219.

Respectfully submitted,

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Mary J. Edwards  
Reg. No. 55,140

Wilmer Cutler Pickering  
Hale and Dorr LLP  
60 State Street  
Boston, Massachusetts 02109  
Telephone: (617) 526-6215  
Facsimile: (617) 526-5000